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poles, the areas of the circumpolar continents would be continually lessening, and at the same time the entire mass would tend to assume the figure of an oblate spheroid. Hence, if any land should exist at the equatorial regions due to small irregularities in the earth's surface, the ratio of its area to that of the circumpolar land would, up to a certain limit, be continually increasing. This conclusion is confirmed by that at which Playfair has arrived in his *Illustrations of the Huttonian Theory*,* although we cannot implicitly confide in the accuracy of his numerical results, as he has not exhibited the successive steps of his investigation."

Mr. Donovan read the first part of a paper "On the universal Vitality of Matter, and its Exaltation into animal and vegetable Life."

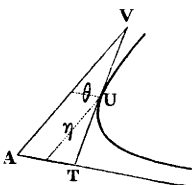
The opinions of the ancient philosophers on this subject were referred to, and it was shown that the vitality of matter was maintained as a fundamental principle in the most celebrated of the schools of antiquity, and that it has been accredited by many in modern times. The author then explained that he was far from attributing to matter any vitality of the kind possessed by animals or even vegetables; and showed that it is possible to conceive the existence of some of the properties of life in matter, along with a capability of conjunction with others, when circumstances favourable to such a change are present. Examples of this kind were given. He adduced instances in which, by the successive abstraction of properties, vitality of the most exalted character was gradually degraded to the lowest kind of inorganic life. Abstracting from all consideration of an immortal spirit which belongs to man alone, it was shown that life and death are merely relative; that many properties of life are discoverable in death; that life may be simulated by death, and death by life; and processes were re-

* Works, vol. i. p. 489.

ferred to, in which matter generally considered inanimate assumes additional properties and becomes alive. Many arguments were then brought forward to show that organic life is the result of exalting inorganic life by combination of elementary properties.

The following extract of a letter from Sir William Rowan Hamilton to the Rev. Charles Graves was read to the Academy :

“ If I had been more at leisure when last writing, I should have remarked that besides the construction of the ellipsoid by the two *sliding spheres*, which, in fact, led me last summer to an equation nearly the same as that lately submitted to the Academy, a simple interpretation may be given to the equation,



$$TV \frac{\eta\rho - \rho\theta}{U(\eta - \theta)} = \theta^2 - \eta^2; \quad (1)$$

which may also be thus written,

$$TV \frac{\rho\eta - \theta\rho}{\eta - \theta} = \frac{\theta^2 - \eta^2}{T(\eta - \theta)}. \quad (2)$$

“ At an umbilic U , draw a tangent TUV to the focal hyperbola, meeting the asymptotes in T and V ; then I can shew *geometrically*, as also in other ways,—what, indeed, is likely enough to be known,—that the sides of the triangle TAV are, as respects their *lengths*,

$$\overline{AV} = a + c; \quad \overline{AT} = a - c; \quad \overline{TV} = 2b. \quad (3)$$

Now my η and θ are precisely the halves of the sides AV and AT of this triangle; or they are the two co-ordinates of the umbilic U , referred to the two asymptotes, when *directions* as well as lengths are attended to. This explains several of my formulæ, and accounts for the remarkable circumstance